

TRANSMITTAL LETTER TO THE UNITED STATES

DESIGNATED/ELECTED OFFICE (DO/EO/US)

CONCERNING A FILING UNDER 35 U.S.C. 371

RCA90215

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

09/581332

INTERNATIONAL APPLICATION NO.

PCT/FR98/02730

INTERNATIONAL FILING DATE

15 DECEMBER 1998

PRIORITY DATE CLAIMED

17 DECEMBER 1997

TITLE OF INVENTION

DEVICE FOR AUTHENTICATING DIGITAL IMAGES

APPLICANT(S) FOR DO/EO/US

SYLVAIN CHEVREAU, PAUL-LOUIS MEUNIER, ROBERT BOYER AND ALAIN STARON

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☐ A copy of the International Search Report (PCT/ISA/210).
8. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☒ Certificate of Mailing by Express Mail
20. ☒ Other items or information:

RETURN POSTCARD

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21. The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

- ☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$970.00
- ☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$840.00
- ☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$690.00
- ☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$670.00
- ☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) \$96.00

ENTER APPROPRIATE BASIC FEE AMOUNT =**\$840.00**

Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).

\$0.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE
Total claims	8 - 20 =	0	x \$18.00
Independent claims	2 - 3 =	0	x \$78.00

\$0.00**\$0.00**Multiple Dependent Claims (check if applicable). ☐**\$0.00****TOTAL OF ABOVE CALCULATIONS =****\$840.00**

Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable). ☐

\$0.00**SUBTOTAL =****\$840.00**

Processing fee of \$130.00 for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).

\$0.00**TOTAL NATIONAL FEE =****\$840.00**

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). ☐

\$0.00**TOTAL FEES ENCLOSED =****\$840.00**Amount to be:
refunded

\$

charged

\$

- ☐ A check in the amount of _____ to cover the above fees is enclosed.
- ☒ Please charge my Deposit Account No. **07-0832** in the amount of _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.
- ☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **07-0832** A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

**JOSEPH S. TRIPOLI - PATENT OPERATIONS
THOMSON MULTIMEDIA LICENSING, INC.
PO BOX 5312 - 2 INDEPENDENCE WAY
PRINCETON, NJ 08543-5312**

SIGNATURE

Fred A. Wein

NAME

27,168

REGISTRATION NUMBER

DATE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : SYLVAIN CHEVREAU, et al.
Int'l. Appl. No. : PCT/FR98/02730
Int'l. Filing No : December 15, 1998
For : DEVICE FOR AUTHENTICATING DIGITAL IMAGES

PRELIMINARY AMENDMENT

Honorable Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

In the US national phase application of PCT/FR98/02730 filed herewith,
please enter the following amendments:

Please amend the claims (which are annexes of the International
Preliminary Examining Report) as follows:

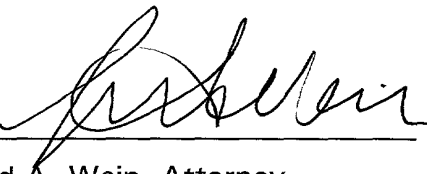
In the Claims

In Claim 3, line 1, delete "Claims 1 and 2" and insert --Claim1--
In Claim 4, line 1, delete "Claims 1 and 3" and insert --Claim 1--
In Claim 5, line 1, delete "Claims 2 and 3" and insert --Claim 2--
In Claim 6, line 1, delete "Claims 1 to 5" and insert --Claim 1—
In Claim 7, line 1, delete "Claims 1 to 5" and insert --Claim 1—
In Claim 8, line 3, delete "Claims 1 to 7" and insert --Claim 1—

REMARKS

No fee is believed to been incurred by virtue of this amendment.
However, if a fee is incurred on the basis of this amendment, please charge such
fee against deposit account 07-0832.

Respectfully Submitted,
Sylvain Chevreau, et al.

By: 
Fred A. Wein, Attorney
Registration No. 27,168
(609) 734-9518

THOMSON multimedia Licensing Inc.
PO Box 5312, 2 Independence Way
Princeton, NJ 08543-5312

533 Rec'd PCT/PTO 09 JUN 2000

DEVICE FOR AUTHENTICATING DIGITAL IMAGES

The present invention relates to a device for authenticating digital images.

5 The invention applies more particularly to the authenticating of digital images emanating from a picture taking apparatus such as, for example, a camera head or a photographic apparatus.

10 Digital images are falsifiable images. Thus are, for example, digital images constituting a news report or a television transmission, whether these images are broadcast live or from a source of recorded data.

15 People to whom digital images are sent therefore find themselves in a situation where the authenticity of the information which they receive is not guaranteed. This drawback is all the more significant with the proliferation of sources of information such as, for example, the sources of
20 information originating from journalists commonly referred to as "freelance" journalists. To avoid this drawback, processes for authenticating digital images have been proposed, in particular in the patent US 5,499,294. These processes make it possible to
25 authenticate the picture taking apparatus itself but not the journalist or the cameraman.

The purpose of the invention is to remedy this drawback.

30 The present invention relates to a device for authenticating the taking of pictures made up of digital data comprising a picture taking apparatus and a security element carrying out the signing of at least part of the digital data, characterized in that the security element is a detachable element comprising a
35 decryption circuit with secret key K1, this element being connected to the picture taking apparatus by an interface circuit provided in the picture taking apparatus.

Other advantages and characteristics of the invention will become apparent on reading a preferred embodiment given with reference to the hereto appended figures in which:

5 - Figure 1 represents a first picture taking device allowing the authentication of digital images according to the preferred embodiment of the invention;

 - Figure 2 represents a second picture taking device allowing the authentication of digital images
10 according to the preferred embodiment of the invention;

 - Figure 3 represents, according to the invention, a device for authenticating the digital images emanating from a picture taking device such as that represented in Figure 1 or in Figure 2.

15 In all the figures, the same labels designate the same elements.

Figure 1 represents a first picture taking device allowing the authentication of digital images according to the preferred embodiment of the invention.

20 The picture taking device consists of a picture taking apparatus 1 and of a detachable security element 2. The picture taking apparatus 1 can be, for example, a camera head or a photographic apparatus. According to the preferred embodiment of the invention, the
25 detachable security element is a chip card.

 The picture taking apparatus 1 comprises an objective 3, a block 4 of circuits for processing the signal emanating from the objective 3, a hashing circuit 5, a multiplexer 6 and a circuit 7 for
30 interfacing with the chip card.

 In a manner known per se, the objective 3 and the block 4 of processing circuits make it possible to transform a light signal L into a digital signal VN.

 According to the invention, a fraction $F1(VN)$
35 of the digital signal VN is tapped off, preferably in a regular manner, at the output of the block 4. Each fraction $F1(VN)$ tapped off is sent to the hashing circuit 5. The circuit 5 can be an electronic circuit or a software element. By way of nonlimiting examples,

the fraction $F1(VN)$ of the digital signal VN can be made up of the even or odd lines of the same image or of the data relating to the luminance component of the same image. The fraction $F1(VN)$ can also be made up of
5 several frames tapped off at regular time intervals in the case of a camera head or image by image in the case of a photographic apparatus. In a general manner, the datum $F1(VN)$ is made up of significant data of an image.

10 The result $m1$ emanating from the function for hashing the signal $F1(VN)$ is sent to the interface circuit 7. The datum $m1$ comprises, for example, a few tens of bits.

The interface circuit 7 allows the
15 bidirectional transfer of data between the apparatus 1 and the chip card 2. Preferably, the circuit 7 is a bidirectional serial interface circuit to the ISO-7816 standard.

The chip card contains a decryption circuit
20 (not represented in the figure) as well as a secret key $K1$. Preferably, the key $K1$ is stored in a programmable memory contained in the card 2. Under the action of the key $K1$, the successive data $m1$ sent to the card 2 are decrypted by the decryption circuit so as to constitute
25 a string of data $D(m1)_{K1}$. Each datum $D(m1)_{K1}$ constitutes the signature of the datum $m1$ and hence of the fraction $F1(VN)$ from which the datum $m1$ emanated.

By way of the interface circuit 7, the data $D(m1)_{K1}$ are sent from the chip card 2 to a first input
30 of the multiplexer 6 which receives, in addition, the digital signal VN on a second of its inputs.

The signal $S1$ emanating from the multiplexer 6 is then made up of the digital data VN and of the data $D(m1)_{K1}$. Preferably, each datum $D(m1)_{K1}$ is inserted into
35 a header associated with the fraction of datum $F1(VN)$ which corresponds thereto. According to another embodiment of the invention, the data $D(m1)_{K1}$ are substituted for some of the data VN which are then lost.

Figure 2 represents a second picture taking device allowing the authentication of digital images according to the preferred embodiment of the invention.

The picture taking device consists of a picture taking apparatus 8 and of a detachable security element 9, for example, a chip card. The apparatus 8 can be, for example, a camera head or a photographic apparatus. The apparatus 8 contains the same circuits as the apparatus 1 described in Figure 1 with the exception of the hashing circuit 5.

According to the embodiment of Figure 2, the hashing function is carried out in the chip card 9. From this it follows that the fraction $F1(VN)$ of the digital signal VN is sent to the chip card 9.

As mentioned hereinabove, the hashing of the datum $F1(VN)$ generates a datum $m1$ which, decrypted, generates a datum $D(m1)_{K1}$. By way of the interface circuit 7 the successive data $D(m1)_{K1}$ are sent from the chip card 9 to the multiplexer 6. The signal $S1$ emanating from the picture taking apparatus 8 is then generated as mentioned earlier.

A picture taking device according to the invention operates with decryption keys $K1$ having different values. One and the same key $K1$ can then be specific to one person or to a set of people constituting, for example, a collection of journalists. From this it follows that an advantage of the invention is that it guarantees the origin of the authenticated images.

In accordance with the invention, the chip card provides for a personal key function whose key is secret. Moreover, the use of a chip card implies the implementation of a procedure of mutual identification between the chip card and the device receiving the chip card, namely the picture taking apparatus. From this it follows that the security level relating to the various steps implemented in the chip card and the picture taking device is a high security level.

Figure 3 represents, according to the invention, a device for authenticating digital images emanating from a picture taking device such as that represented in Figure 1 or in Figure 2.

5 The device 10 for authenticating digital images comprises a demultiplexer 11, an encryption circuit 12 with public key K_2 , a hashing circuit 13 and a comparator 14. The demultiplexer 11 receives on its input a signal S_1 such as that mentioned in Figures 1
10 and 2. The signal S_1 originates either from a picture taking device such as that described in Figures 1 and 2, or from a source of recorded data such as, for example, a magnetic tape, a digital video disc or else a diskette.

15 The function of the demultiplexer 11 is to separate the data $D(m_1)_{K_1}$ from the digital data VN . The data $D(m_1)_{K_1}$ are sent to the encryption circuit 12 with public key K_2 .

20 The operation of encryption with public key K_2 of a datum $D(m_1)_{K_1}$ leads to the calculation of an encrypted datum $C(D(m_1)_{K_1})_{K_2}$.

 According to the invention, fractions $F_2(VN)$ of the digital signal VN are tapped off at the output of the demultiplexer 11. The tapping off of the fractions
25 $F_2(VN)$ is performed as a mirror image of the tapping off of the fractions $F_1(VN)$. Thus, each fraction $F_2(VN)$ corresponds to a fraction $F_1(VN)$ and the data which are contained in the fraction $F_2(VN)$ which corresponds to the fraction $F_1(VN)$ are data of the same type as the
30 data contained in the fraction $F_1(VN)$. The expression "data of the same type" should be understood to mean that the data which constitute the fraction $F_2(VN)$ are data which are a priori identical to the data which constitute the fraction $F_1(VN)$ which corresponds
35 thereto: the data are identical if the fraction $F_1(VN)$ has not been falsified and different, in whole or in part, if the fraction $F_1(VN)$ has been falsified.

 In all cases, the data contained in a fraction $F_2(VN)$ represent the same signal as the data contained

in the fraction $F1(VN)$ corresponding thereto. Thus, for example, if the data contained in a fraction $F1(VN)$ are made up of the even lines of an image, the data contained in the fraction $F2(VN)$ which corresponds to the fraction $F1(VN)$ are made up of the even lines of the same image.

The circuit 13 operates the hashing of the data contained in the fractions $F2(VN)$. The hashing operation performed by the circuit 13 is identical to that performed by the circuit 5. From this it follows that the datum $m2$ which is associated with a fraction $F2(VN)$ corresponding to a fraction $F1(VN)$ is identical to the datum $m1$ which is associated with the fraction $F1(VN)$ if the fraction $F1(VN)$ has not been falsified. The datum $m2$ emanating from the circuit 13 and the datum $C(D(m1)_{K1})_{K2}$ are sent to the comparator 14.

The signal $S3$ emanating from the comparator 14 then makes it possible to indicate whether the digital data VN are authentic data or falsified data: these are data which can be regarded as authentic if each datum $m2$ is equal to the datum $C(D(m1)_{K1})_{K2}$ corresponding thereto, these are data where one is aware that they have been falsified if at least one datum $m2$ is different from the datum $C(D(m1)_{K1})_{K2}$ corresponding thereto.

According to the invention, the device 10 for authenticating images can be incorporated into a control unit receiving images filmed by a camera head.

CLAIMS

1. Device for authenticating the taking of pictures made up of digital data comprising a picture taking apparatus and a security element carrying out the signing of at least part of the digital data, characterized in that the security element is a detachable element comprising a decryption circuit with secret key K_1 , this element being connected to the picture taking apparatus by an interface circuit provided in the picture taking apparatus.
2. Device according to Claim 1, characterized in that the detachable element incorporates a hashing circuit.
3. Device according to either of Claims 1 and 2, characterized in that the detachable element is a chip card.
4. Device according to Claims 1 and 3, characterized in that the picture taking apparatus (1) moreover comprises a multiplexing circuit (6) and a circuit (5) for hashing at least one first fraction ($F_1(VN)$) of the digital data in such a way as to generate a first hashed datum (m_1), the decryption circuit with secret key K_1 of the chip card (2) carrying out the decryption of the first hashed datum (m_1) in such a way as to generate a signature ($D(m_1)_{K_1}$) of the first hashed datum (m_1), the signature ($D(m_1)_{K_1}$) and the digital data (VN) being transmitted to the multiplexing circuit (6) so as to constitute a multiplexed signal (S_1).
5. Device according to Claims 2 and 3, characterized in that the picture taking apparatus (1) furthermore comprises a multiplexing circuit (6), a hashing circuit of the chip card carrying out the hashing of at least a first fraction ($F_1(VN)$) of the digital data originating from the picture taking apparatus (8) in such a way as to generate a first hashed datum (m_1) and the first hashed datum (m_1) is decrypted in the decryption circuit in such a way as to generate a signature ($D(m_1)_{K_1}$) of the first hashed datum

(m1), the signature $(D(m1)_{K1})$ emanating from the chip card and the digital data (VN) being transmitted to the multiplexing circuit (6) in such a way as to constitute a multiplexed signal (S1).

- 5 6. Device according to Claims 1 to 5, characterized in that the picture taking apparatus (1, 8) is a camera head.
7. Device according to Claims 1 to 5, characterized in that the picture taking apparatus (1, 10 8) is a photographic apparatus.
8. Device for authenticating digital data emanating from a device according to any one of Claims 1 to 7, characterized in that it comprises a demultiplexer (11) for separating the digital data (VN) 15 and the signature $(D(m1)_{K1})$, an encryption circuit with public key K2 for calculating an encrypted datum $(C(D(m1)_{K1})_{K2})$ on the basis of the signature $(D(m1)_{K1})$, a circuit (13) for hashing at least one second fraction $(F2(VN))$ of the digital data (VN) emanating from the 20 demultiplexer (11) in such a way as to generate a second hashed datum (m2), a comparison circuit (14) for comparing the encrypted datum $(C(D(m1)_{K1})_{K2})$ with the second hashed datum (m2) in such a way as to constitute a signal (S3) making it possible to verify the 25 authenticity of the digital data.

ABSTRACT

PROCESS FOR AUTHENTICATING DIGITAL IMAGES AND DEVICE IMPLEMENTING THE PROCESS

The invention relates to a process for authenticating digital images as well as a system implementing the process.

The system implementing the process comprises a picture taking device - camera or photographic apparatus - and a device for processing the information emanating from the picture taking device.

The picture taking device comprises means for hashing and signing successive fractions of the filmed or photographed signal. The signal emanating from the picture taking device is constructed by multiplexing the plain signal and the hashed and signed signal fractions.

The processing device comprises a demultiplexer for separating the hashed and signed data from the plain signal, means for hashing the signal fractions which correspond to the signal fractions which have been hashed and signed in the picture taking device, means for performing public-key encryption of the hashed and signed signal fractions, and means for comparing the signal fractions hashed in the processing device with the data emanating from the public-key encryption operation.

The signal emanating from the comparator then makes it possible to indicate whether the digital images which have been filmed are authentic or falsified.

The invention applies more particularly to news reporting cameras in the professional domain.

No figure

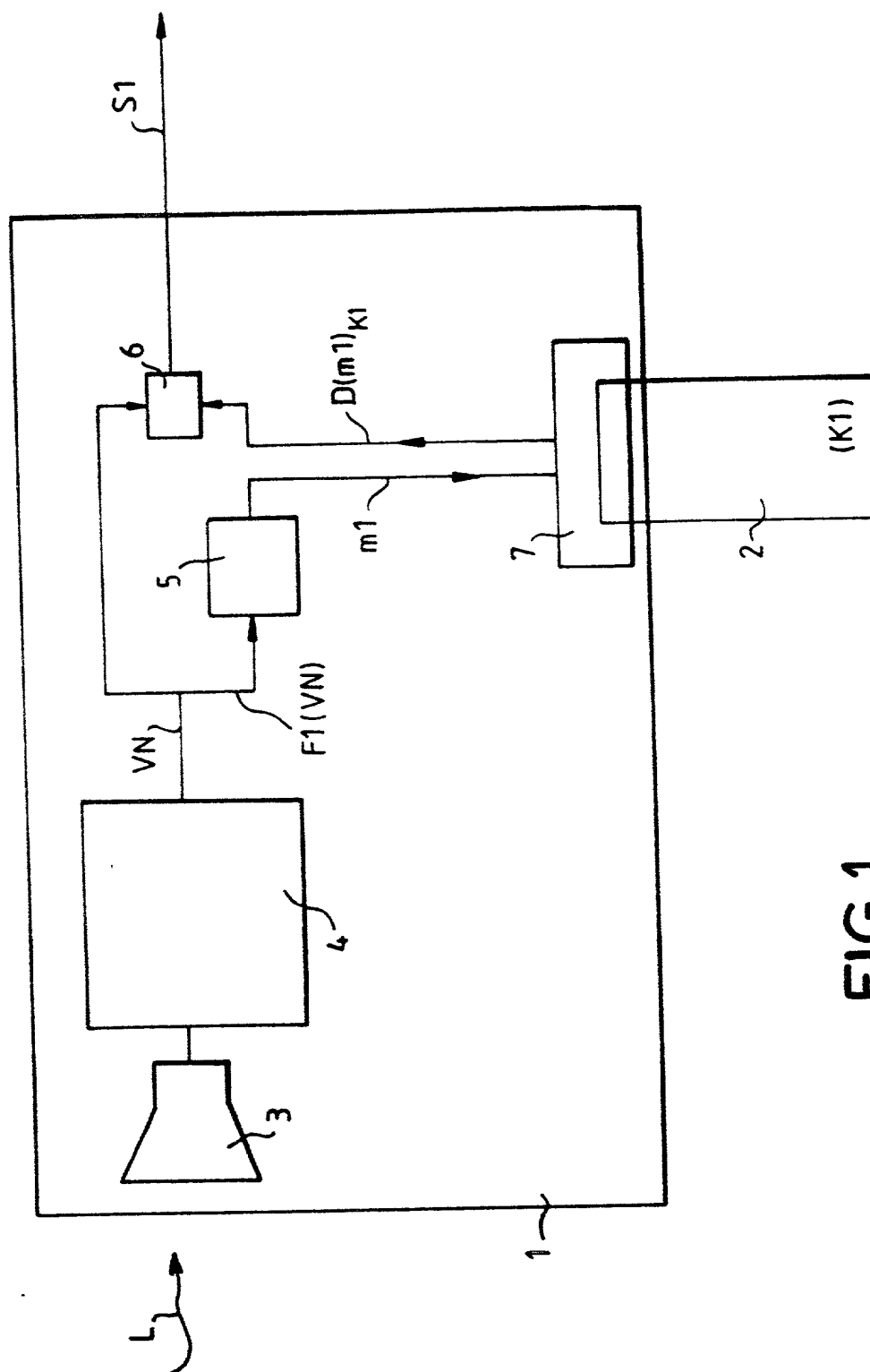


FIG.1

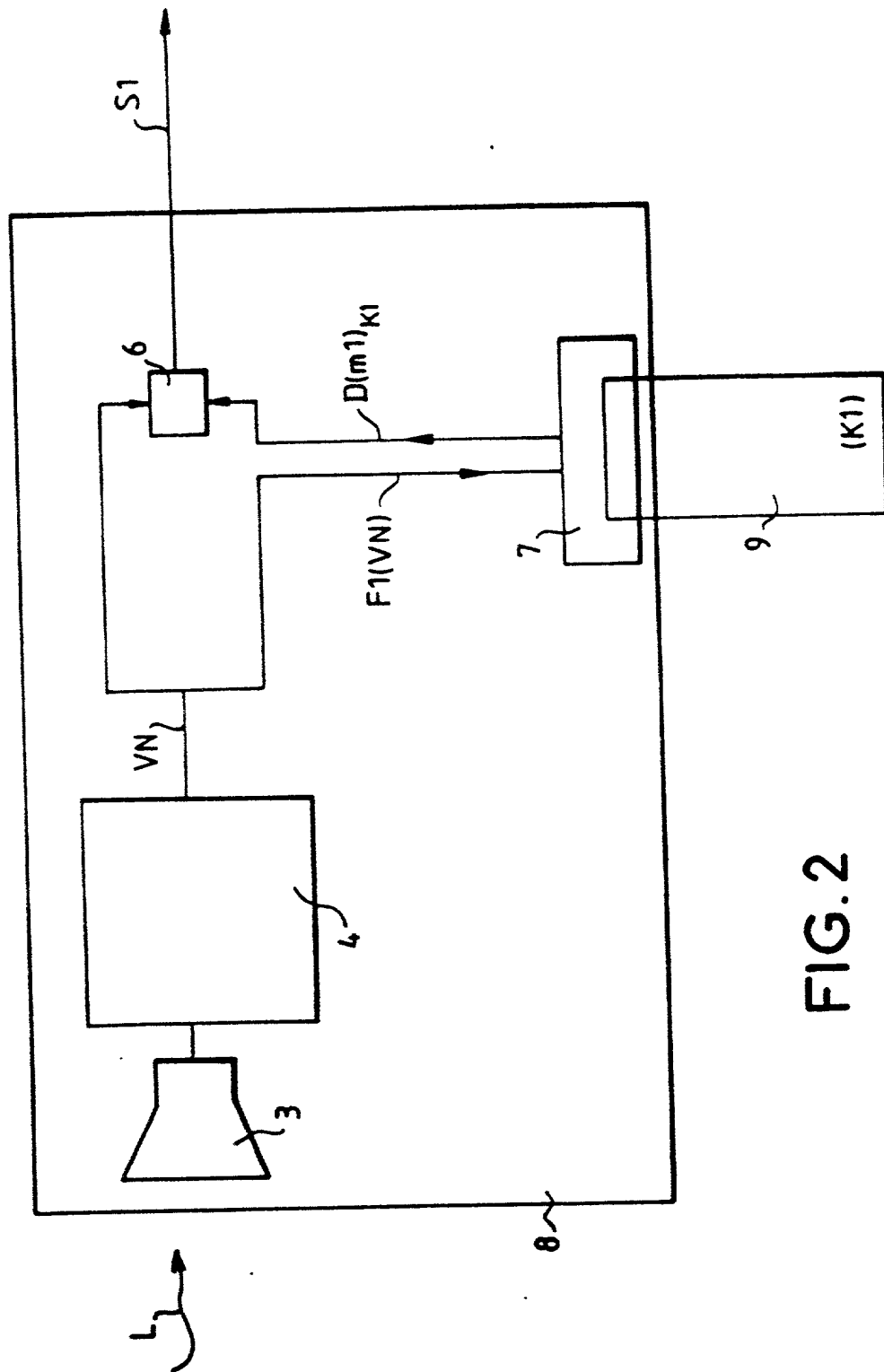


FIG. 2

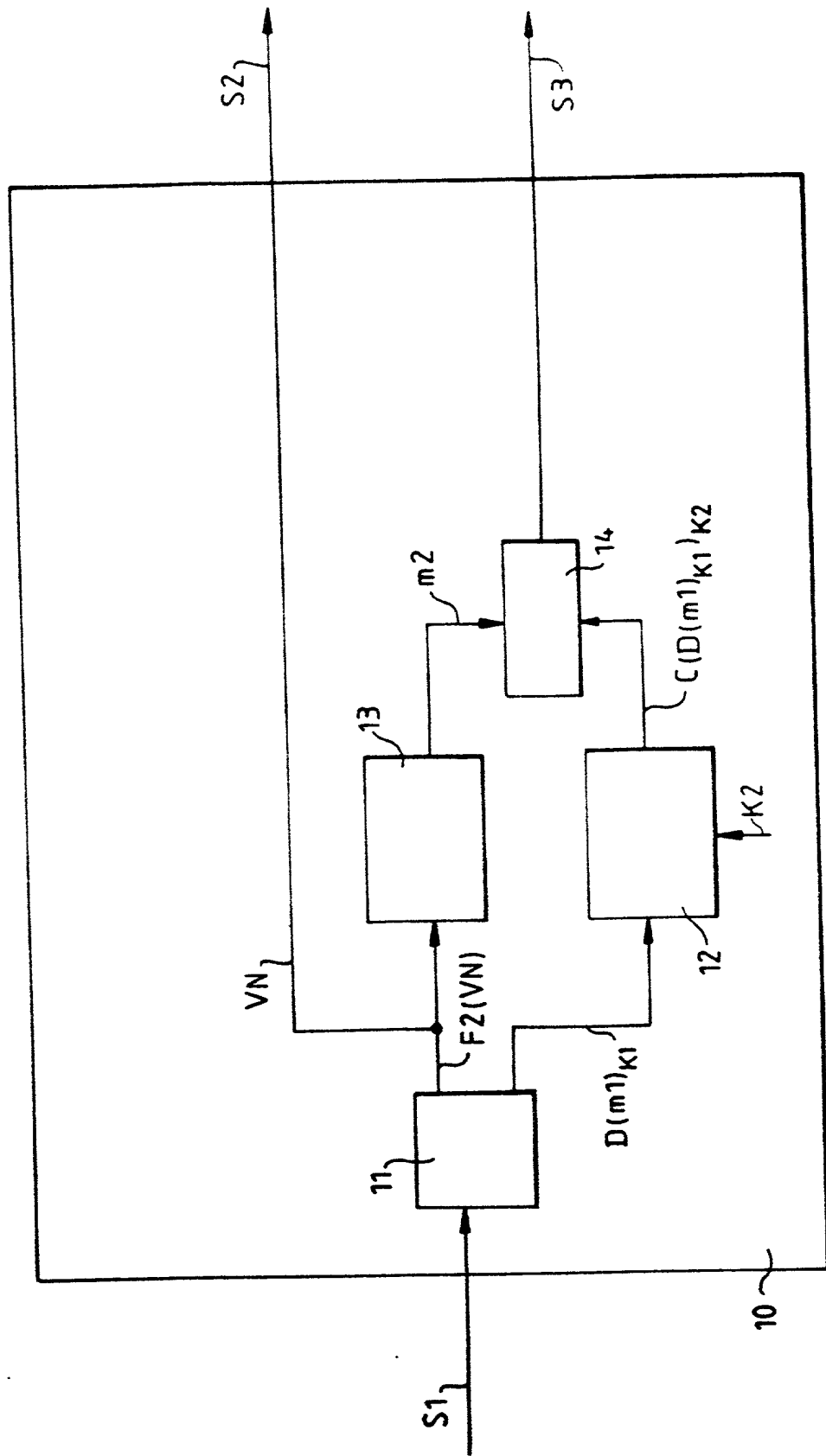


FIG. 3

DECLARATION FOR UNITED STATES PATENT APPLICATION,
POWER OF ATTORNEY, DESIGNATION OF CORRESPONDENCE ADDRESS

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

DEVICE FOR AUTHENTICATING DIGITAL IMAGES

the specification of which

(CHECK ONE) () is attached hereto.

(xx) was filed on December 15, 1998, Application Serial. No. PCT/FR98/02730 and was amended on .

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 CFR 1.56(a).

I hereby claim foreign priority benefits under 35 USC 119 of any foreign application(s) for patent, utility model, design or inventor's certificate having a filing date before that of the application(s) on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed	
Number	Country	Date Filed	Yes	No

I hereby claim the benefit under 35 USC 120 of any US Application(s) listed below, and, insofar as the subject matter of each of the claims of this Application is not disclosed in the prior US application in the manner provided by the first paragraph of 35 USC 112, I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 CFR 1.56(a).

Serial No.: _____ Filed: _____

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under of 18 USC 1001 and that such wilful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Joseph S. Tripoli (Reg. No. 26,040), Peter M. Emanuel (Reg. No. 26,542), Eric Herrmann (Reg. No. 29,169) and Joseph J. Laks (Reg. No. 27,914) Telephone: (609) 734-9813.

Address all correspondence to Joseph S. Tripoli, Patent Operations - Thomson multimedia Licensing, Inc. - CN 5312 - Princeton, New Jersey 08543-0028.

Signature: [Signature] Date: 15 day of May, 2000.

Sole or First Joint Inventor: Sylvain Chevreau

Citizenship: FR

Residence and Post Office Address:

9 square du Roi Arthur
F- 35000 Rennes
France

Signature: _____ Date: _____ day of _____, 2000.

Second Joint Inventor: Paul-Louis Meunier

Citizenship: FR

Residence and Post Office Address:

23 avenue du Dr Netter
F-75012 Paris
France

**DECLARATION FOR UNITED STATES PATENT APPLICATION,
POWER OF ATTORNEY, DESIGNATION OF CORRESPONDENCE ADDRESS**

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

DEVICE FOR AUTHENTICATING DIGITAL IMAGES

the specification of which
(CHECK ONE) () is attached hereto.

(xx) was filed on December 15, 1998, Application Serial. No. PCT/FR98/02730 and was amended on .

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Number	Prior Foreign Application(s) Country	Date Filed	Priority Claimed	
			Yes	No

I hereby claim the benefit under 35 USC 120 of any US Application(s) listed below, and, insofar as the subject matter of each of the claims of this Application is not disclosed in the prior US application in the manner provided by the first paragraph of 35 USC 112, I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 CFR 1.56(a).

Serial No.: _____ Filed: _____

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under of 18 USC 1001 and that such wilful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Joseph S. Tripoli (Reg. No. 26,040), Peter M. Emanuel (Reg. No. 26,542), Eric Herrmann (Reg. No. 29,169) and Joseph J. Laks (Reg. No. 27,914) Telephone: (609) 734-9813.

Address all correspondence to Joseph S. Tripoli, Patent Operations - Thomson multimedia Licensing, Inc. - CN 5312 - Princeton, New Jersey 08543-0028.

Signature: _____ Date: _____ day of _____, 2000.

Sole or First Joint Inventor: Sylvain Chevreau

Citizenship: FR

Residence and Post Office Address: 9 square du Roi Arthur
F- 35000 Rennes
France

Signature: _____ Date: _____ day of _____, 2000.

Second Joint Inventor: Paul-Louis Meunier

Citizenship: FR

Residence and Post Office Address: 23 avenue du Dr Netter
F-75012 Paris
France

DECLARATION FOR UNITED STATES PATENT APPLICATION,
POWER OF ATTORNEY, DESIGNATION OF CORRESPONDENCE ADDRESS

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

DEVICE FOR AUTHENTICATING DIGITAL IMAGES

the specification of which

(CHECK ONE) () is attached hereto.

(xx) was filed on December 15, 1998 Application Serial. No. PCT/FR98/02730
and was amended on .

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 CFR 1.56(a).

I hereby claim foreign priority benefits under 35 USC 119 of any foreign application(s) for patent, utility model, design or inventor's certificate having a filing date before that of the application(s) on which priority is claimed:

Number	Prior Foreign Application(s) Country	Date Filed	Priority Claimed	
			Yes	No

I hereby claim the benefit under 35 USC 120 of any US Application(s) listed below, and, insofar as the subject matter of each of the claims of this Application is not disclosed in the prior US application in the manner provided by the first paragraph of 35 USC 112, I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 CFR 1.56(a).

Serial No.: _____ Filed: _____

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under of 18 USC 1001 and that such wilful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Joseph S. Tripoli (Reg. No. 26,040), Peter M. Emanuel (Reg. No. 26,542), Eric Herrmann (Reg. No. 29,169) and Joseph J. Laks (Reg. No. 27,914) Telephone: (609) 734-9813.

Address all correspondence to Joseph S. Tripoli, Patent Operations - Thomson multimedia Licensing, Inc. - CN 5312 - Princeton, New Jersey 08543-0028.

Signature: _____ Date: _____ day of _____, 2000.

Sole or First Joint Inventor: Sylvain Chevreau

Citizenship: FR

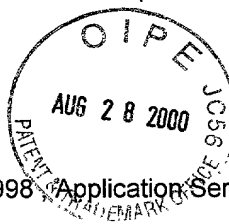
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Signature: _____ Date: _____ day of _____, 2000.

Third Joint Inventor: Rober Boyer

Citizenship: FR

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Signature: _____ Date: _____ day of _____, 2000.

Fourth Joint Inventor: Alain Staron

Citizenship: FR

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DECLARATION FOR UNITED STATES PATENT APPLICATION,
POWER OF ATTORNEY, DESIGNATION OF CORRESPONDENCE ADDRESS

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

DEVICE FOR AUTHENTICATING DIGITAL IMAGES

the specification of which

(CHECK ONE) ☐ is attached hereto.

☒ was filed on December 15, 1998, Application Serial. No. PCT/FR98/02730 and was amended on .

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 CFR 1.56(a).

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Prior Foreign Application(s)			Priority Claimed	
Number	Country	Date Filed	Yes	No

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Serial No.: _____ Filed: _____

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Address all correspondence to Joseph S. Tripoli, Patent Operations - Thomson multimedia Licensing, Inc. - CN 5312 - Princeton, New Jersey 08543-0028.

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